Table 1
Surgical inductions

	1959	*1960*	*1961*	*1962*	*1963*
Percentage of total deliveries	45	37·4	42·1	38·7	38
Percentage of inductions given oxytocin	20·5	24·9	21	25·9	30·46
Perinatal loss (uncorrected)	3·38	2·8	2·9	1·94	2·98
Cæsarean section (per cent of all inductions)	1·4	3·5	2·4	2·9	3·3 (0·5 oxytocin)
Cæsarean section (for failure to go into labour)	0	2	0	3	4
Cæsarean section (for prolapsed cord)	0	0	0	2	0

The Cæsarean section rate in 1963 is 3·3% with an incidence of oxytocin drip in 30·46% of cases. The Cæsarean section rate in drip cases was 0·5%. Mr Theobald accuses me of the use of a pharmacological drip as opposed to his physiological drip but I get better results as regards labour with my higher dosage (Theobald 1959). I did try his dosage for a spell and gave it up. I have seen no complications of a serious nature with the hospital use of the pharmacological drip. One exception is the grand multipara: in her case the drip may cause such good uterine action towards the end of the first stage that there is no intermission for the baby, so that in these cases one has to be careful to cut down the drip to a much lower level. The following points with regard to the use of the drip are important:

(1) If the indication for induction of labour is present and real, the state of the cervix will only interfere with the method employed. In an early-gestation pre-eclamptic it may be necessary to empty the uterus immediately by hysterotomy or Cæsarean section or, if there is more time, to attempt to open up the cervix by preliminary drip therapy prior to rupture of the forewaters.

(2) Where the cervix is long but permits rupture of the forewaters time must be allowed for the taking-up of the cervix, hence my delay of drip therapy for twenty-four hours in cases of pre-eclampsia and of forty-eight hours in cases of postmaturity.

(3) It should be remembered that, induction of labour apart, some women never go into labour or, if they do, only unsatisfactorily and then Cæsarean section is necessary. So there is a failure rate even when left to their own state. Persistence with drip therapy, therefore, in induced cases when there is little or no response should be looked at from this point of view.

In the light of our experience should we not now regard spontaneous early rupture of the membranes as an attempt on the part of Nature to initiate a better and quicker labour?

Two fundamental researches must be undertaken: (1) To determine an easy and quick method of estimating placental sufficiency. In Bristol over the past few years we have explored vaginal cytology in this connexion but by the time changes occur the baby may already have perished. We have found some help from œstriol estimations in the urine but they are difficult and time consuming. In one case where twenty-four-hour urine specimens were being collected for œstriol estimations we realized (after delivery) that a good indicator had been the fall in the amounts of urine passed over three successive days. Further investigation of this may reveal an easier assessment than complicated biochemical tests.

(2) To determine an easy and certain method, preferably medical, for induction of labour at all stages of gestation. Release of the progesterone block of Csapo (1961) by some means may provide the answer. And then release of liquor will be debated for other reasons.

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Results from the Perinatal Mortality Survey of 1958

The Perinatal Mortality Survey of 1958 was carried out by the National Birthday Trust Fund. The Survey was directed by Dr Neville Butler, and the first report was published by Dr Butler and Professor Bonham in 1963.

The results given here are based on the main Survey week which was March 3–9, 1958. A questionnaire was completed by the midwife

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responsible for every mother delivered during that week. The estimated births were 17,415, and the questionnaires returned were 17,385. A total of 16,994 singleton births were available for analysis, the 391 multiple births being the subject of a separate analysis to be published in future. The detailed post-mortem study with histological examination was available in 1,407 stillbirths, and in 781 neonatal deaths. The result of the stillbirths showed that in 30% of cases intrapartum anoxia was the chief cause of death. In 17·4% congenital malformation was the main cause. In a further 17% of antepartum deaths no major lesion was found.

An analysis of 781 early neonatal deaths, that is death in the first week of life, showed that 21·6% were due to congenital malformations. Pneumonia accounted for 13·3% of the deaths, and hyaline membrane for 15%.

Induction of labour was performed in 13% of the total population and in 13% of the deaths. The indications for induction are shown in Table 1.

Table 1

Indications for induction of labour (Butler & Bonham 1963)

Indication	*Population* No.	%	*Deaths* No.	%	*Survey mortality ratio (M)*
Toxæmia	749	33·8	330	20·0	105
Past term	823	37·2	233	14·1	68
Past term & toxæmia	127	5·7	33	2·0	62
Small pelvis	44	2·0	12	0·7	65
Rh antibodies	68	3·1	85	5·1	298
Unstable lie	32	1·4	7	0·4	52
Residue and no information	252	11·4	111	6·7	105
Antepartum hæmorrhage	76	3·4	272	16·4	855
Intrauterine death	23	1·0	313	18·9	Deaths only
Congenital malformations	19	0·9	258	15·6	Deaths only
Total	2,213	100·0	1,654	100·0	178

Toxæmia was the primary indication in 33·8% and prolonged pregnancy in 37·2%; the joint indication of toxæmia and postmaturity accounted for 5·7%. The mortality in induction for toxæmia was 105 as against the standard Survey mortality of 100, while in patients induced for prolonged pregnancy the mortality was 68.

Methods of induction: It was shown that amniotomy was used in some form in 7·6% of the population, that is in 58·7% of all cases induced; 30·7% were low and 43·1% were high ruptures. In 26% both methods were used or information was incomplete.

Oxytocin in some form was used additionally in 18·7% of all amniotomies; its use was more frequent in cases of high rupture than in low rupture. The Cæsarean section rate after low rupture was 4·8% and after high rupture 5·2%, with no significant difference.

The number of patients delivered within forty-eight hours following low rupture was 87%, while with high rupture the figure was 71%, thus showing that low rupture is a more effective form of induction than high rupture. The incidence of pneumonia following induction of labour with the membranes ruptured over six hours was 11·2% in the case of high amniotomy as against 6% in the case of low amniotomy, thus showing the greater risk to the baby of high amniotomy from the point of view of pneumonia. When the membranes were ruptured for more than forty-eight hours the pneumonia deaths reached approximately 20 per 1,000 births, as against 4·5 when the membranes were only ruptured for six to twelve hours, and 5·5 in cases were the membranes were not ruptured. This shows that there is a risk to the baby if the membranes remain ruptured for forty-eight hours or more, and the increase in neonatal pneumonia is very marked.

The importance of maturity in relation to perinatal mortality was also demonstrated by the Survey. The curve of mortality flattens out between 38 and 42 weeks, being higher before 38 weeks and rising after 42 weeks of gestation. The mortality rate in cases with toxæmia is slightly increased at all maturities to mothers suffering from toxæmia.

Oxytocin as the sole agent was used in 11% of inductions without amniotomy, and in 11·3% with oil, bath and enema with or without a sweep of the membranes; 3·1% of the population had oxytocin as part of the technique for induction.

The number of cases was not sufficient to assess the efficiency of methods other than amniotomy, because many of the cases induced medically were at or near term and spontaneous labour might have supervened.

The results of amniotomy, however, are plain and two points concerned with induction of labour emerge from the results of this Perinatal Mortality Survey: (1) The great superiority and greater safety of low amniotomy as against high amniotomy. (2) The great importance to the fœtus of maturity. Delivery before 38 weeks or after 42 weeks shows a definite increase in perinatal mortality and these figures are based on large numbers. The importance, therefore, of aiming at a pregnancy between 38 and 42 weeks is obvious from the results given.

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